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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,355	10/15/2003	Jun-Woo Kim	3364P142	7834
8791 7590 01/31/2007 BLAKELY SOKOLOFF TAYLOR & ZAFMAN 12400 WILSHIRE BOULEVARD SEVENTH FLOOR LOS ANGELES, CA 90025-1030			EXAMINER WARE, CICELY Q	
			ART UNIT	PAPER NUMBER
			2611	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/31/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/687,355	Applicant(s) KIM ET AL.	
	Examiner Cicely Ware	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 9-13 is/are rejected.
- 7) ☐ Claim(s) 7, 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore,

a. With regard to claim 1, applicant recites "a comparator for comparing an output of the subtractor with a specific reference value established for AGC, and performing feedback of a comparison result for ADC to the RF unit". Examiner asserts that there is no comparator in Fig. 3, which corresponds with the elements of claim 1. Examiner asserts that all elements claimed must be shown in the drawings. Therefore "the comparator" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

b. With regard to claim 1, claim 1 recites "a first energy calculator; a first accumulator; a second accumulator; a second energy calculator". Examiner asserts that in Fig. 3 there are three accumulators, therefore three accumulators should be claimed

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in claim 1. Examiner is unable to decipher which is the first accumulator and which is the second accumulator. Examiner asserts that all elements claimed must correspond with elements in the drawings and vice versa. No new matter should be entered.

c. With regard to claims 1 and 10, applicant recites "a comparator for comparing an output of the subtractor with a specific reference value established for AGC, and performing feedback of a comparison result for ADC to the RF unit".

Examiner asserts that there is no comparator in Fig. 3, which corresponds with the elements of claim 1. Examiner asserts that all elements claimed must be shown in the drawings.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

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the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities:
 - a. Pg. 3, line 16, applicant uses "frequency, band". Examiner suggests using "frequency band" for clarification purposes.
 - b. Pg. 7, line 23, applicant uses "the means values". Examiner suggests using "the mean values" for clarification purposes.

Appropriate correction is required.

Claim Objections

4. Claim 6 is objected to because of the following informalities:
 - a. With regard to claim 6, claim 6, line 4, applicant makes reference to " R_i and R_q ". Examiner asserts that there is no " R_i or R_q " in the equation of claim 6.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. Claim 14 recites the limitation "the final three" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 5, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimazaki (US Patent 5,812,025) in view of Zehavi et al. (US Patent Application 2004/0013209).

(1) With regard to claim 1, Shimazaki discloses in (Fig. 3) an AGC (automatic gain control) device in an OFDM (orthogonal frequency division multiplexing) system, comprising: an RF (radio frequency) unit for controlling a gain of an input signal (col. 1, lines 6-18, col. 2, lines 19-24, 27-41); a first energy calculator for calculating an energy of the input signal (col. 2, lines 27-41); a first accumulator for accumulating the energy calculated by the first energy calculator, finding a mean value thereof, and outputting the mean value (col. 2, lines 27-41).

However Shimazaki does not disclose a second accumulator for producing a DC offset of the input signal; a second energy calculator for calculating an energy of the DC offset produced by the second accumulator; a subtractor for subtracting the energy of the DC offset of the input signal output by the second energy calculator from the energy of the input signal output by the first accumulator; and a comparator for comparing an

output of the subtractor with a specific reference value established for AGC, and performing feedback of a comparison result for AGC to the RF unit.

However Zehavi et al. discloses in (Fig. 3) a second accumulator (72) for producing a DC offset of the input signal; a second energy calculator (74) for calculating an energy of the DC offset produced by the second accumulator; a subtractor (84) for subtracting the energy of the DC offset of the input signal output by the second energy calculator from the energy of the input signal output by the first accumulator; and a comparator (88) for comparing an output of the subtractor (84) with a specific reference value established for AGC, and performing feedback of a comparison result for AGC to the RF unit (Fig. 2 (50, 52, 58, 54, 56), Fig. 3 (50)).

Therefore it would have been obvious to one of ordinary skill in the art to modify Shimazaki in view of Zehavi et al. to incorporate a second accumulator for producing a DC offset of the input signal; a second energy calculator for calculating an energy of the DC offset produced by the second accumulator; a subtractor for subtracting the energy of the DC offset of the input signal output by the second energy calculator from the energy of the input signal output by the first accumulator; and a comparator for comparing an output of the subtractor with a specific reference value established for AGC, and performing feedback of a comparison result for AGC to the RF unit in order to provide an improved receiver for FSK signals and particularly GFSK signals sent over a wireless link (Zehavi et al., Pg. 1 [0005]).

(2) With regard to claim 5, claim 5 inherits all the limitations of claim 1. Shimazaki further discloses wherein the first and second energy calculators find a summation of the square of the input signal and output a result as an energy (col. 2, lines 44-54).

(3) With regard to claim 10, claim 10 inherits all the limitations of claim 1. Shimazaki further discloses in (Fig. 3) an A/D (analog-to-digital) converter (13, 14) for converting the input signal into a digital signal, and inputting the digital signal the first energy calculator (19) and second accumulator (22); and a D/A (digital-to-analog) converter (28) for converting a comparison result output by the comparator into a digital signal and outputting the digital signal to the RF unit (col. 1, lines 6-18, col. 2, lines 27-41).

8. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimazaki (US Patent 5,812,025) in view of Zehavi et al. (US Patent Application 2004/0013209) as applied to claim 1, in view of Seo et al. (US Patent Application 2002/0075946).

With regard to claim 2, claim 2 inherits all the limitations of claim 1. Shimazaki in combination with Zehavi et al. disclose all the limitations of claim 1.

However Shimazaki in combination with Zehavi et al. do not disclose wherein the energy calculation for AGC is performed in a training sequence interval of the input signal.

However Seo et al. discloses wherein the energy calculation for AGC is performed in a training sequence interval of the input signal (Pg. 1, col. 2, lines 37-51).

Therefore it would have been obvious to one of ordinary skill in the art to modify the inventions of Shimazaki in combination with Zehavi et al. to incorporate wherein the energy calculation for AGC is performed in a training sequence interval of the input signal for searching multipaths of a mobile communication system, which enables to fine reverse multipaths using a Dedicated Physical Control Channel (DPCH) transmitted from a mobile station in a reverse link of an asynchronous mobile communication system (Seo et al., Pg. 2, col. 1, lines 21-26).

9. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimazaki (US Patent 5,812,025) in view of Zehavi et al. (US Patent Application 2004/0013209) in view of Seo et al. (US Patent Application 2002/0075946) as applied to claim 2, in further view of Wang et al. (US Patent Application 2003/0152021).

(1) With regard to claim 3, claim 3 inherits all the limitations of claim 2. Shimazaki in combination with Zehavi et al. in combination with Seo et al. disclose all the limitations of claim 2.

However Shimazaki in combination with Zehavi et al. in combination with Seo et al. do not disclose wherein the energy calculation is performed for each interval of 16 samples when the training sequence interval is a short training sequence interval.

However Wang et al. discloses wherein the energy calculation is performed for each interval of 16 samples when the training sequence interval is a short training sequence interval (Pg. 4, col. 1, lines 18-22).

Therefore it would have been obvious to one of ordinary skill in the art to modify

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the inventions of Shimazaki in combination with Zehavi et al. in combination with Seo et al. in view of Wang et al. to incorporate wherein the energy calculation is performed for each interval of 16 samples when the training sequence interval is a short training sequence interval in order to provide a representation of the channel estimate that does not consume relatively large amounts of hardware and power and is able to stem significant loss of information when operations are performed on the representation (Pg. 2, col. 1, lines 13-17).

(2) With regard to claim 4, claim 4 inherits all the limitations of claim 2. Wang et al. further discloses wherein the energy calculation is performed for each interval of 64 samples when the training sequence interval is a long training sequence interval (Pg. 4, col. 2, lines 16-25).

10. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimazaki (US Patent 5,812,025) in view of Zehavi et al. (US Patent Application 2004/0013209) as applied to claim 1, in view of Sugar et al. (US Patent 6,714,605).

With regard to claim 9, claim 9 inherits all the limitations of claim 1. Shimazaki in view of Zehavi et al. disclose all the limitations of claim 1.

However Shimazaki in combination with Zehavi et al. do not disclose a dB converter provided between the subtractor and the comparator, the dB converter converting an output of the subtractor into a dB value.

However Sugar et al. disclose in (Figs. 1, 2, 3, 4) a dB converter (Figs. 3 and 4

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(150)) provided between the subtractor and the comparator, the dB converter converting an output of the subtractor into a dB value (col. 4, lines 30-67, col. 5, lines 1-7, 35-67, col. 6, lines 21-30).

Therefore it would be obvious to one of ordinary skill in the art to modify the inventions Shimazaki in combination with Zehavi et al. in view of Sugar et al. to incorporate a dB converter provided between the subtractor and the comparator, the dB converter converting an output of the subtractor into a dB value in order to provide the capability of processing signals that represent activity in the frequency spectrum over a time interval to derive information about the basic characteristics of those signals in order to identify or classify them (Sugar et al., col. 1, lines 41-45).

11. Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimazaki (US Patent 5,812,025) in view of Wang et al. (US Patent Application 2003/0152021).

(1) With regard to claim 11, Shimazaki discloses in (Fig. 3) the AGC being performed by subtracting an energy of the DC offset from an energy of the input signal and using an energy of the DC offset cancelled ideal signal (col. 1, lines 6-18, col. 2, lines 19-24, 27-41).

However Shimazaki does not disclose an AGC (automatic gain control) method in an OFDM (orthogonal frequency division multiplexing) system, comprising: performing coarse AGC through a DC offset cancellation in a short training sequence interval when an input signal is detected, performing a coarse frequency offset search

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and cancellation in the short training sequence interval; performing fine AGC through a DC offset cancellation in a long training sequence interval, performing a fine frequency offset search and cancellation in the long training sequence interval.

However Wang et al. discloses an AGC (automatic gain control) method in an OFDM (orthogonal frequency division multiplexing) system, comprising: (a) performing coarse AGC through a DC offset cancellation in a short training sequence interval when an input signal is detected (Pg. 3, col. 1, lines 15-18, Pg. 7, col. 2, lines 44-62, Pg. 8, col. 1, lines 38-60, col. 2, lines 1-44); performing a coarse frequency offset search and cancellation in the short training sequence interval (Pg. 3, col. 1, lines 15-18, Pg. 7, col. 2, lines 44-62, Pg. 8, col. 1, lines 38-60, col. 2, lines 1-44) ; performing fine AGC through a DC offset cancellation in a long training sequence interval (Pg. 3, col. 1, lines 24-30, 60-62, col. 2, lines 1-23), performing a fine frequency offset search and cancellation in the long training sequence interval (Pg. 3, col. 1, lines 31-60, col. 2, lines 1-23, Pg. 7, col. 2, lines 36-62).

Therefore it would have been obvious to one of ordinary skill in the art to modify the invention of Shimazaki in view of Wang et al. to incorporate an AGC (automatic gain control) method in an OFDM (orthogonal frequency division multiplexing) system, comprising: performing coarse AGC through a DC offset cancellation in a short training sequence interval when an input signal is detected, performing a coarse frequency offset search and cancellation in the short training sequence interval; performing fine AGC through a DC offset cancellation in a long training sequence interval, performing a fine frequency offset search and cancellation in the long training sequence interval in

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order to provide a representation of the channel estimate that does not consume relatively large amounts of hardware and power and is able to stem significant loss of information when operations are performed on the representation (Pg. 2, col. 1, lines 13-17).

(2) With regard to claim 12, claim 12 inherits all the limitations of claim 11. Wang et al. further discloses wherein the energy calculation is performed for each interval of 16 samples when the training sequence interval is a short training sequence interval (Pg. 4, col. 1, lines 18-22).

(3) With regard to claim 13, claim 13 inherits all the limitations of claim 11. Wang et al. further discloses wherein the energy calculation is performed for each interval of 64 samples when the training sequence interval is a long training sequence interval (Pg. 4, col. 2, lines 16-25).

(4) With regard to claim 14, claim 14 inherits all the limitations of claim 11. Wang et al. further discloses in the final three repeated intervals of the short training sequence (Pg. 4, col. 1, lines 35-39).

(5) With regard to claim 15, see rejection of claim 11.

Allowable Subject Matter

12. Claims 7 and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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Conclusion


13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cicely Ware whose telephone number is 571-272-3047. The examiner can normally be reached on Monday – Friday, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammed Ghayour can be reached on 571-272-3021. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Cicely Ware

cqw
January 23, 2007


MOHAMMED GHAYOUR
SUPERVISORY PATENT EXAMINER